



The Role of Modeling and Simulation in the Evaluation of FCS: OneSAF, NETS, and DETES

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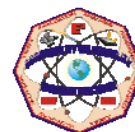
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Motivation for M&S

- FCS is a system-of-systems (SoS)
- Evaluation required at SoS level
- Evaluation relies on modeling & simulation
- Response to environment stresses need to be represented in simulations
 - Initial Nuclear Radiation (INR) effects
 - Prompt, secondary, and delayed gammas
 - Prompt and delayed neutrons
 - EM effects
 - High Altitude Electromagnetic Pulse (HEMP)
 - High Powered Microwaves (HPM)
 - Near lightning strikes (LEMP)

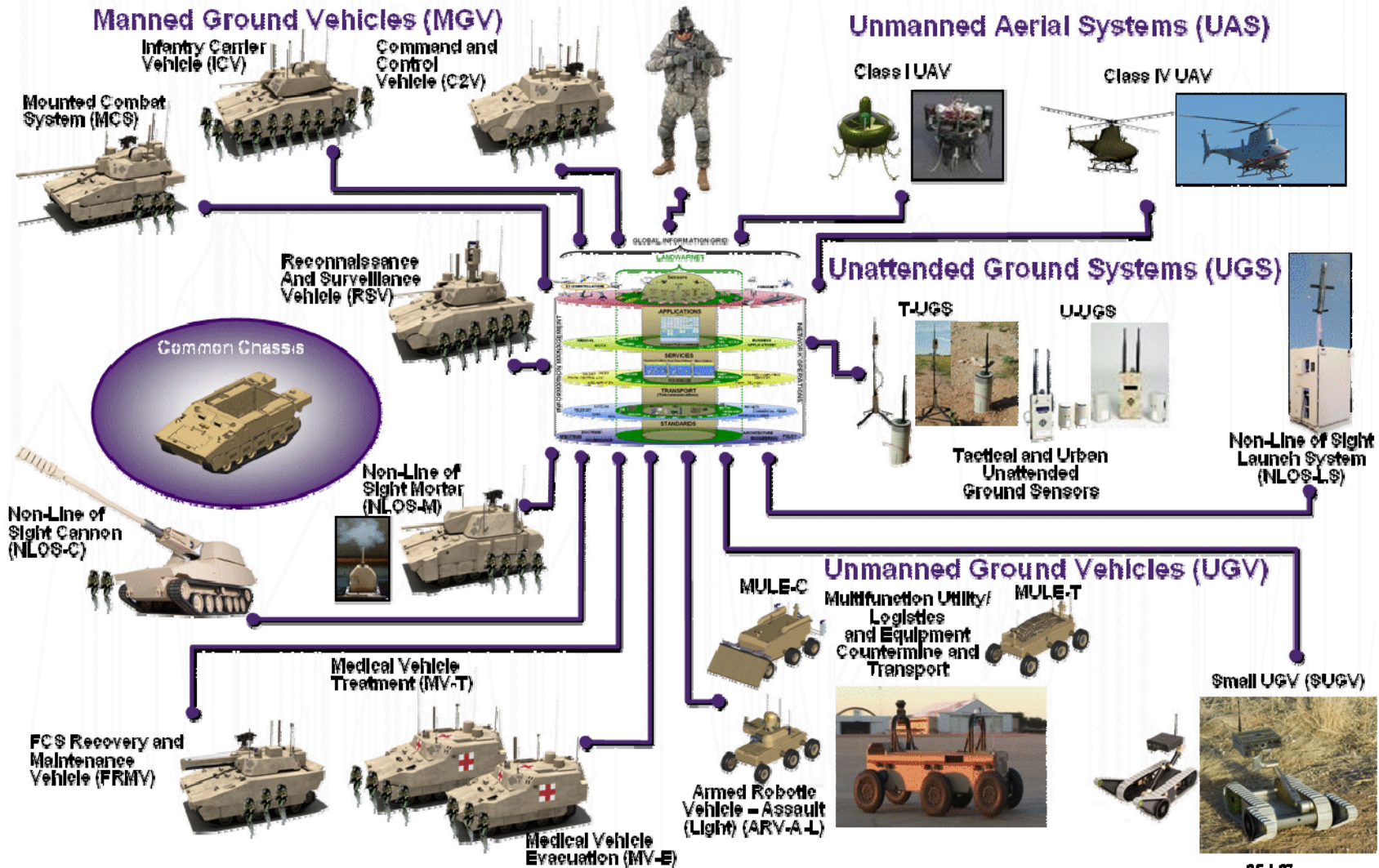


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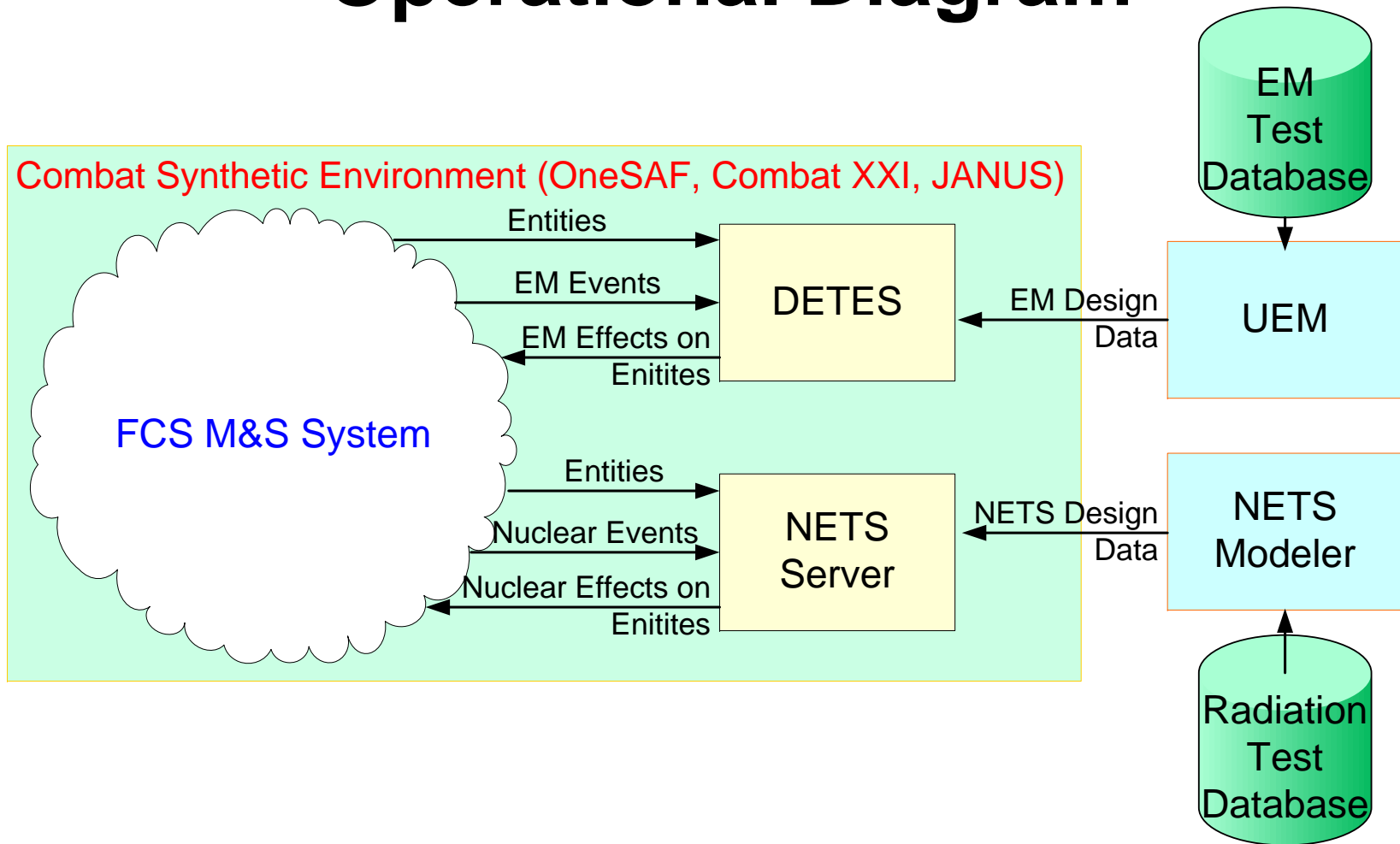


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FCS Brigade Combat Team...



NETS / DETES Operational Diagram



Create System Model

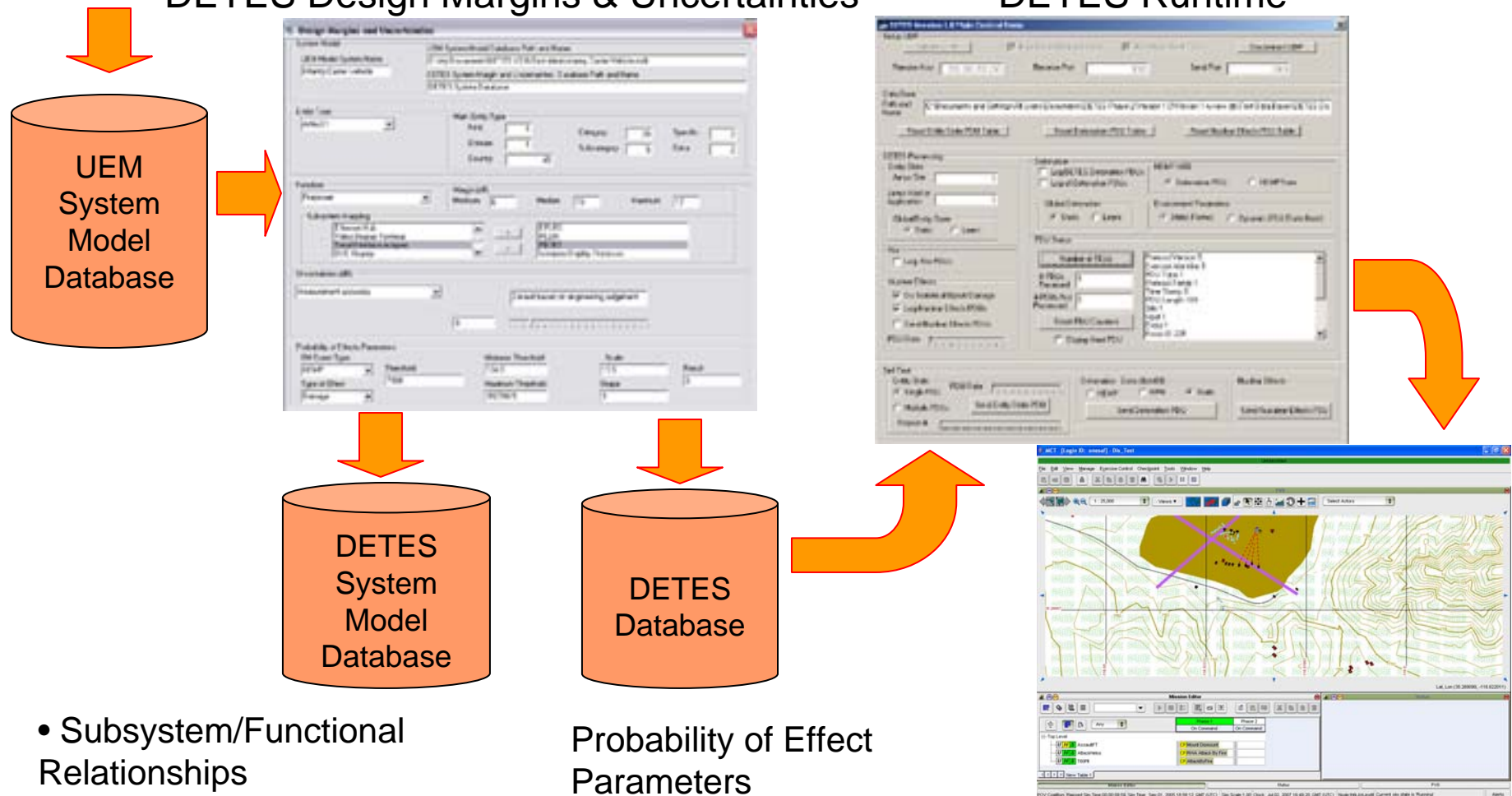


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DETES Functional Flow (2)

DETES Design Margins & Uncertainties

DETES Runtime



- Subsystem/Functional Relationships
- Actual Design Margins
- Uncertainties

Probability of Effect Parameters



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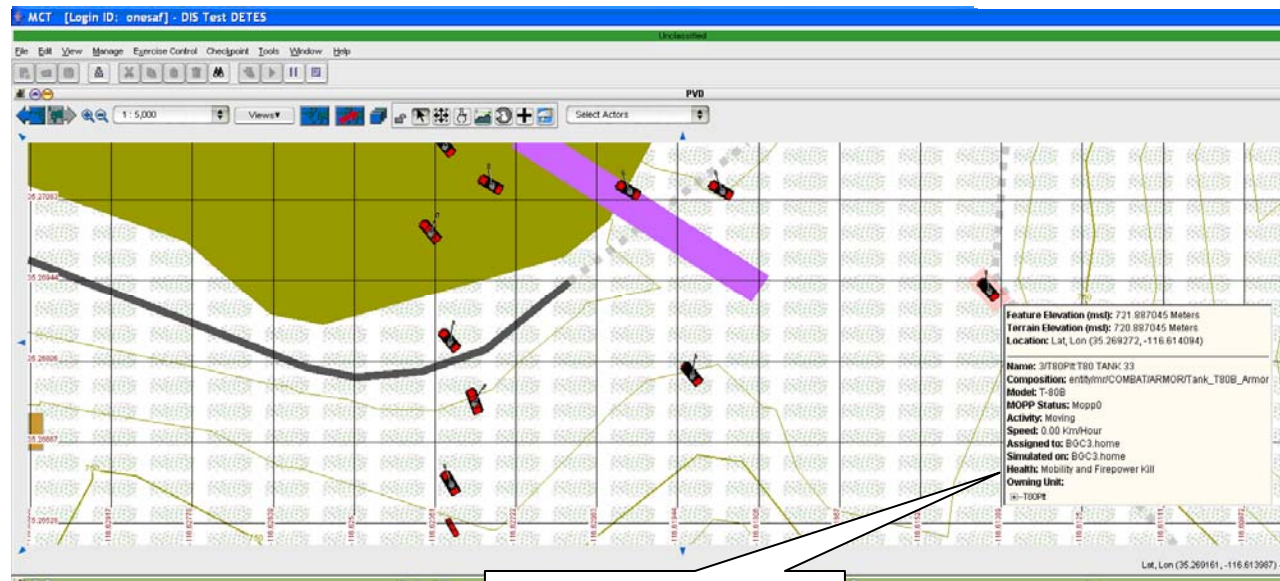


OneSAF



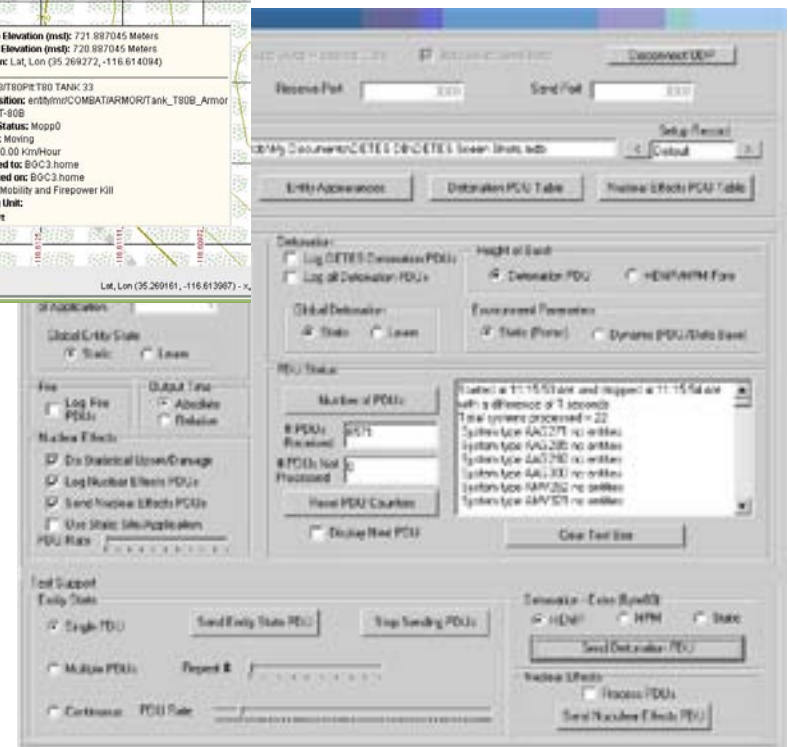
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Example DETES Interop with OneSAF



Mobility & Firepower Kill

DETES Runtime



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FUTURE COMBAT SYSTEMS
FCS
One Team - The Army/DARPA/Industry



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Summary

- FCS is a system-of-systems (SoS)
- Success determined SoS level
- Evaluation relies on modeling & simulation
 - Models must be VV&A'd
 - Use of test data from parts to system level
- Response to environment stresses need to be represented in simulations
 - NETS provides models for INR effects on system electronics in battlefield simulations
 - DETES provides models for EM effects on system electronics in battlefield simulations



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